

**ABSTRACT OF THE DISCLOSURE**

An apparatus and method for densifying porous structures inside a furnace using pressure gradient CVI/CVD. The apparatus includes a stack of porous structures where each porous structure has an aperture therethrough. The apparatus also includes at least one ring-like spacer disposed within the stack of porous structures between neighboring porous structures. The ring-like spacer encircles the apertures of the neighboring porous structures. The stack of porous structures and the at least one ring-like spacer define an enclosed cavity including each porous structure aperture. A channel provides fluid communication between the enclosed cavity and an outer volume defined by the interior surface of the furnace.